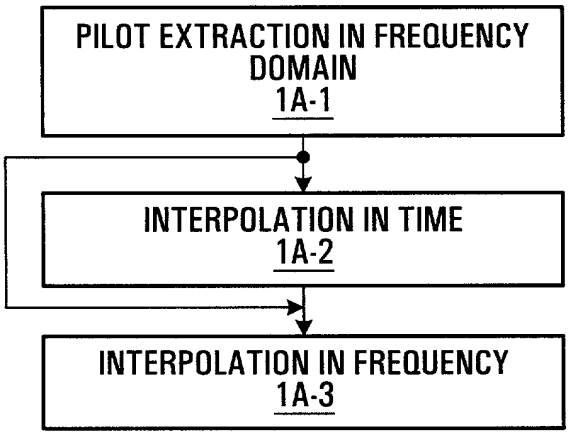

FIG. 1A
(PRIOR ART)

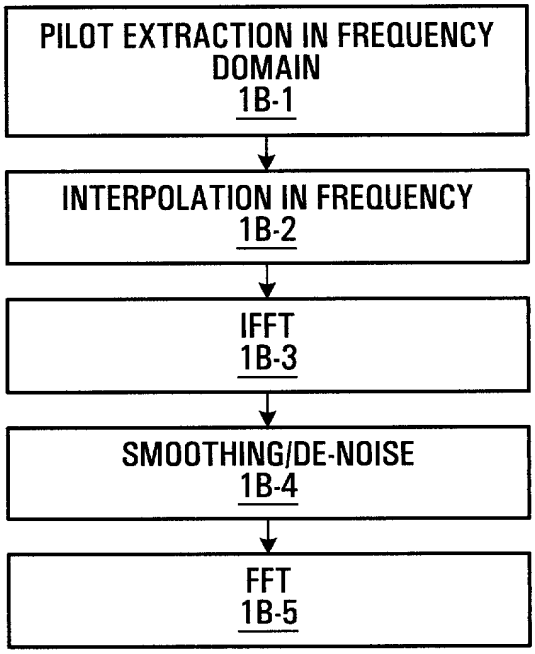

FIG. 1B
(PRIOR ART)

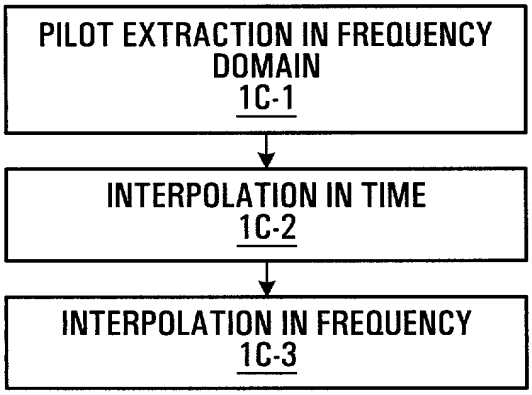

FIG. 1C
(PRIOR ART)

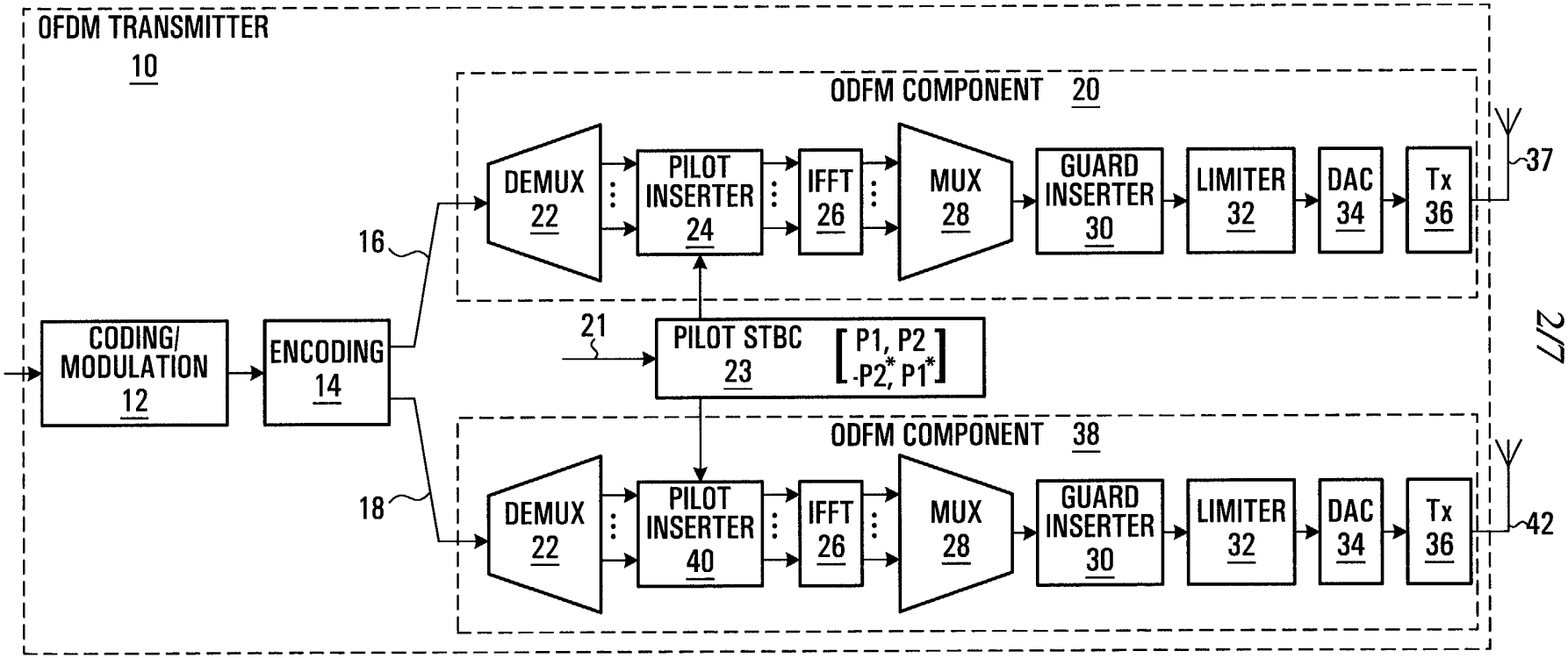
OFDM TRANSMITTER
10
ODFM COMPONENT 20
DEMUX 22
PILOT INSERTER 24
IFFT 26
MUX 28
GUARD INSERTER 30
LIMITER 32
DAC 34
Tx 36
37
16
CODING/ MODULATION 12
ENCODING 14
21
PILOT STBC 23
[P1, P2 -P2*, P1*]
ODFM COMPONENT 38
18
DEMUX 22
PILOT INSERTER 40
IFFT 26
MUX 28
GUARD INSERTER 30
LIMITER 32
DAC 34
Tx 36
42

FIG. 2

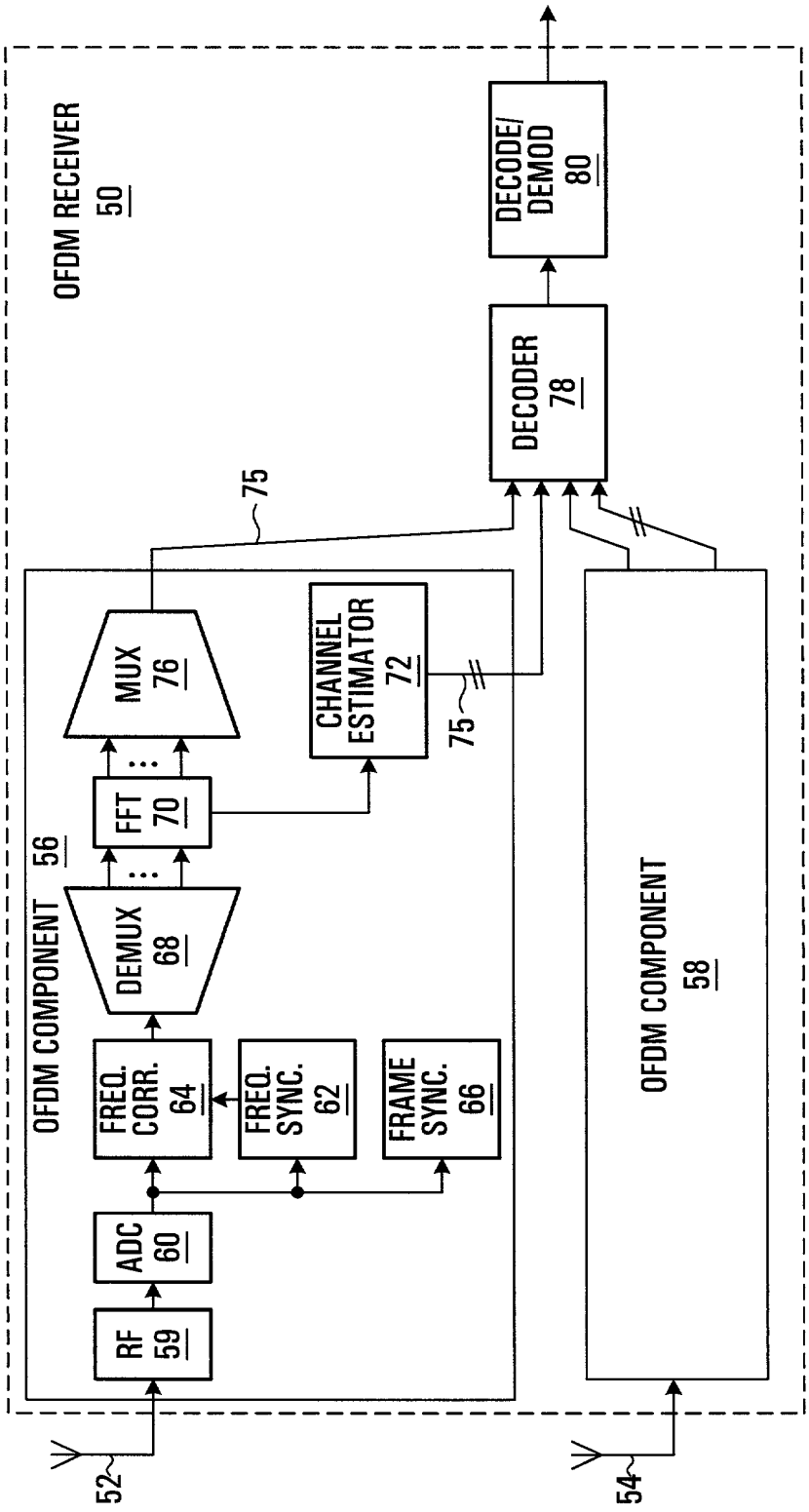
OFDM RECEIVER
50
OFDM COMPONENT
56
RF
59
ADC
60
FREQ. CORR.
64
FREQ. SYNC.
62
FRAME SYNC.
66
DEMUX
68
FFT
70
MUX
76
CHANNEL ESTIMATOR
72
75
75
DECODER
78
DECODE/ DEMOD
80
OFDM COMPONENT
58
52
54

FIG. 3

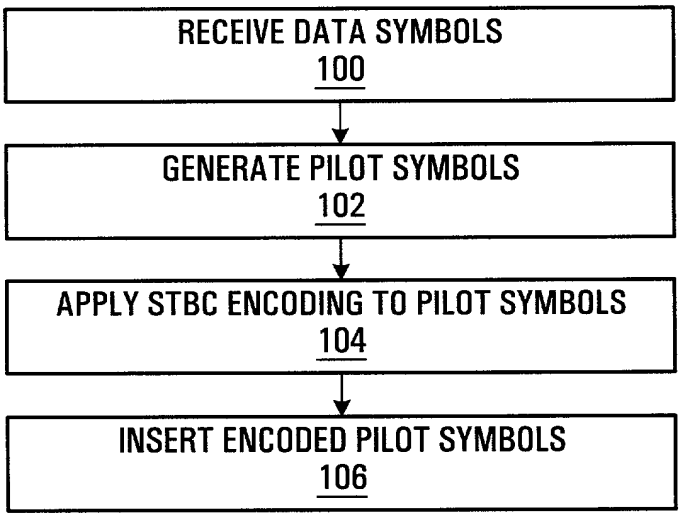
RECEIVE DATA SYMBOLS
100
GENERATE PILOT SYMBOLS
102
APPLY STBC ENCODING TO PILOT SYMBOLS
104
INSERT ENCODED PILOT SYMBOLS
106

FIG. 4

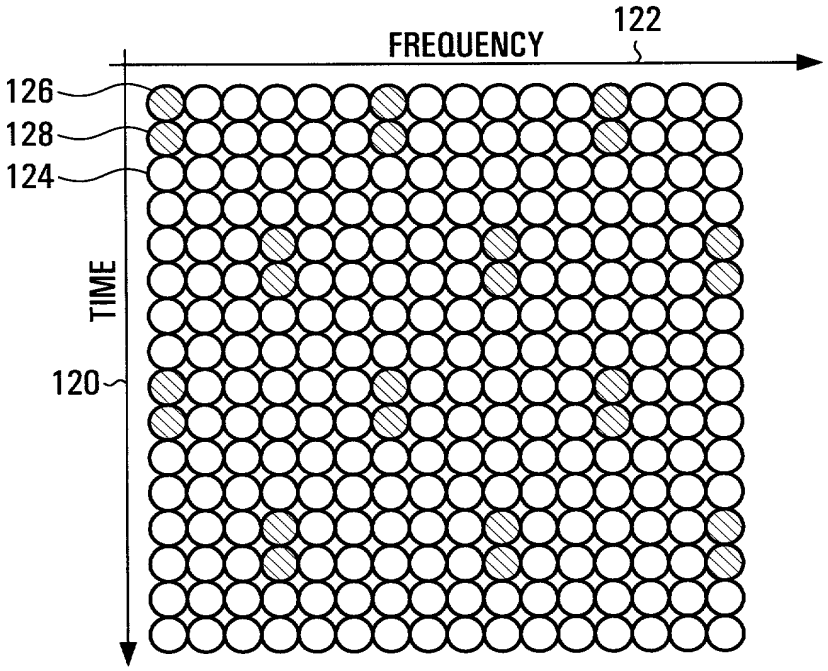
122
FREQUENCY
126
128
124
TIME
120

FIG. 5

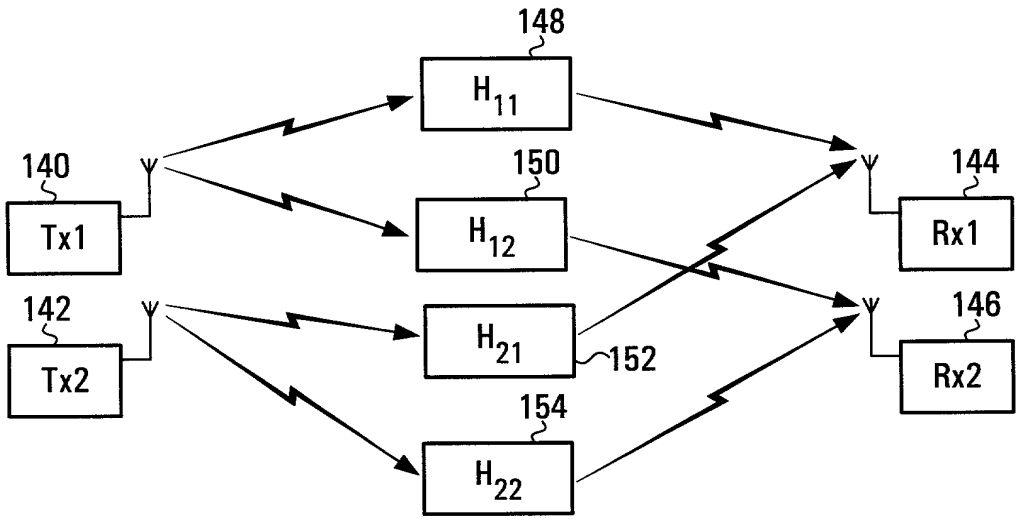

FIG. 6

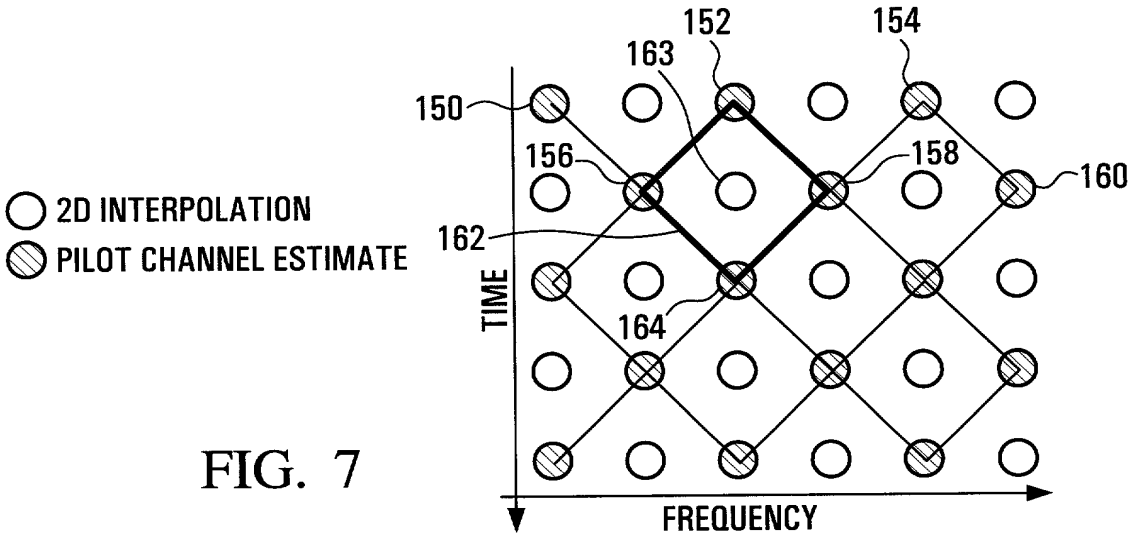

FIG. 7

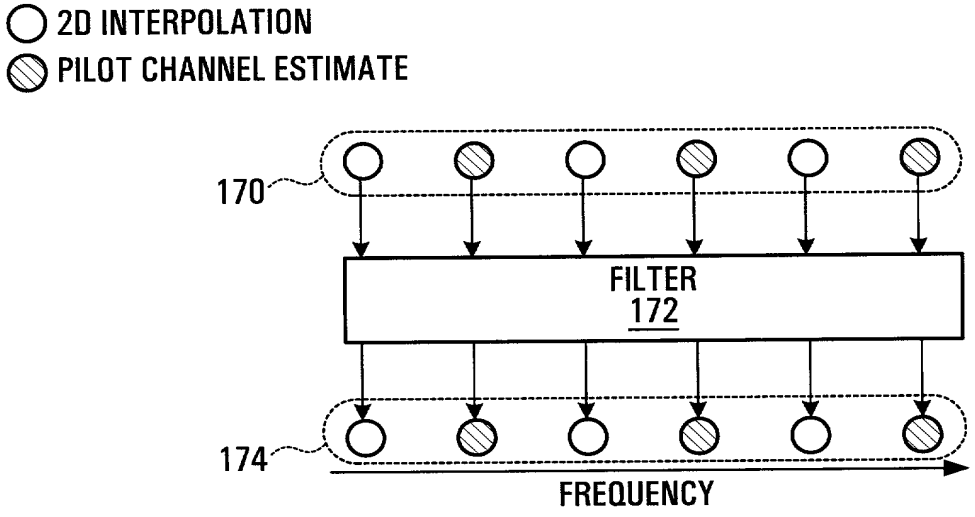

FIG. 8

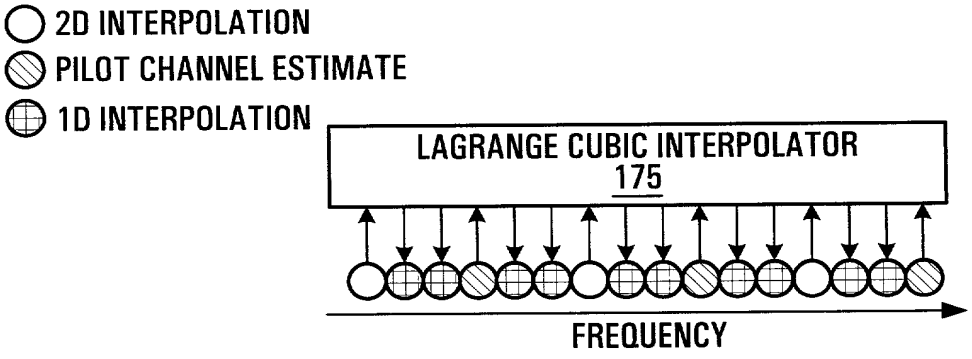

FIG. 9

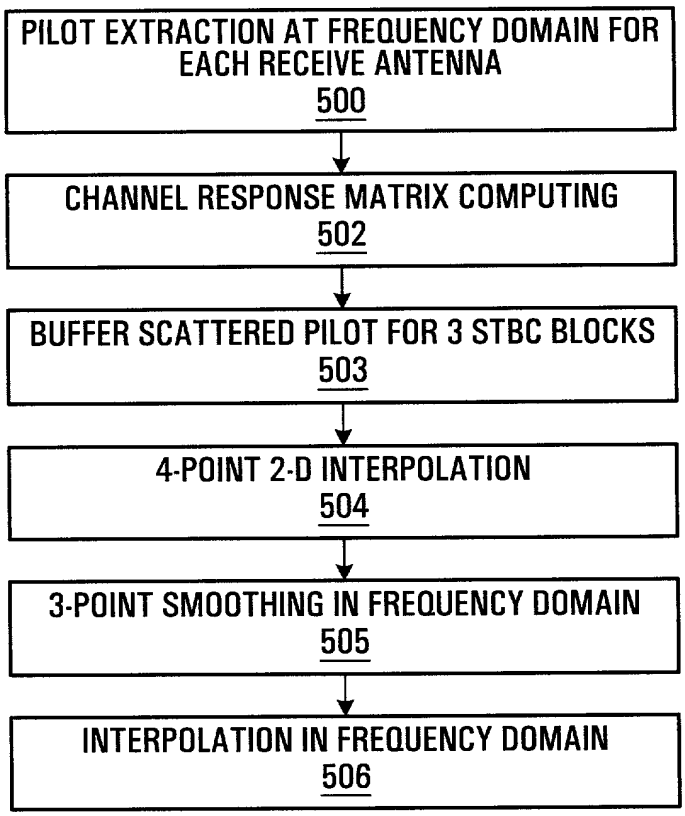
PILOT EXTRACTION AT FREQUENCY DOMAIN FOR EACH RECEIVE ANTENNA
500
CHANNEL RESPONSE MATRIX COMPUTING
502
BUFFER SCATTERED PILOT FOR 3 STBC BLOCKS
503
4-POINT 2-D INTERPOLATION
504
3-POINT SMOOTHING IN FREQUENCY DOMAIN
505
INTERPOLATION IN FREQUENCY DOMAIN
506

FIG. 10

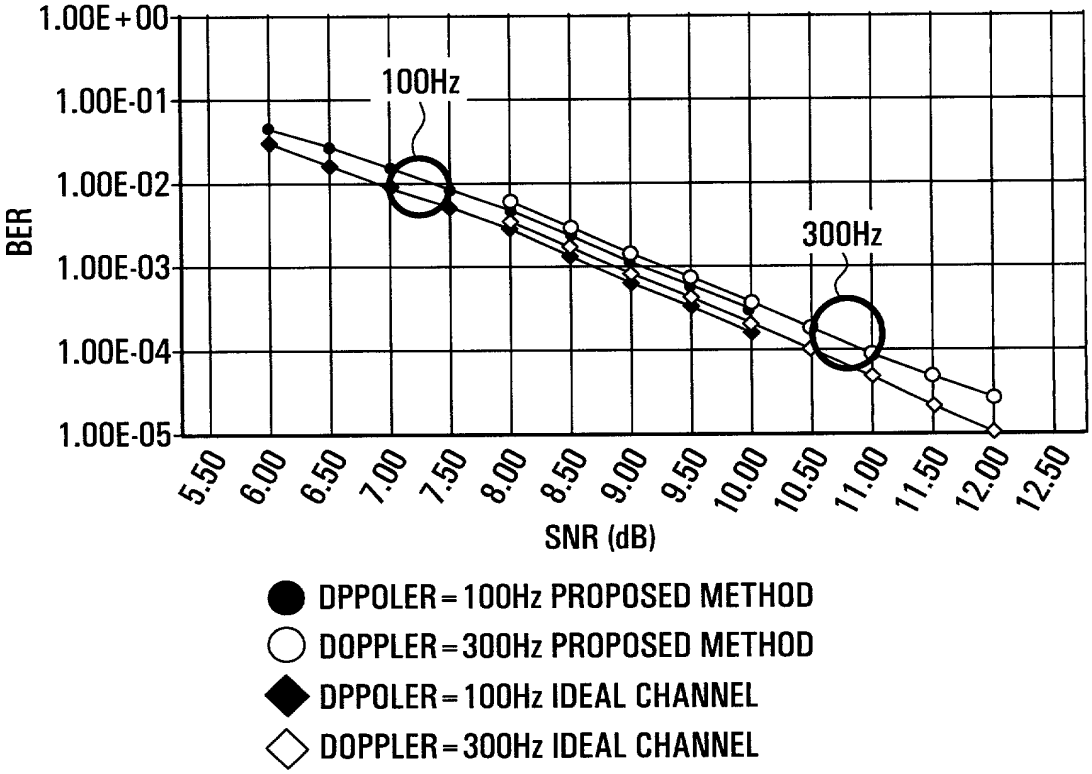
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
BER
100Hz
300Hz
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50
10.00
10.50
11.00
11.50
12.00
12.50
SNR (dB)
DPPOLER=100Hz PROPOSED METHOD
DOPPLER=300Hz PROPOSED METHOD
DPPOLER=100Hz IDEAL CHANNEL
DOPPLER=300Hz IDEAL CHANNEL

FIG. 11